

REMARKS

Claims 14 to 24, 27 to 31, and 33 to 48 are currently pending in the application. Claims 25, 26, and 32 have been cancelled. Applicants note with appreciation the fact that the Office Action states that claims 19, 20, 23, 24, 26, 29, 31, and 32 would be allowable if rewritten in independent form.

Claim 23 was amended solely to correct an obvious typographical error.

Claims 29, 30, 32, and 33 are objected to under 37 C.F.R. § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicants respectfully submit that claims 29, 30, 32, and 33 now properly depend from independent claim 28 and further limit the subject matter of claim 28. This amendment of dependency, as well as that in claim 31, corrects a typographical error and appears to be consistent with the interpretation made in the Office Action on page 3 for the purposes of examination that the claims further limit process claims 32 (should the Office Action have read 28 instead of 32). Therefore, Applicants respectfully submit that the objection of these claims should be removed.

Claims 29 to 33 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action states that claims 29 to 33 lack sufficient antecedent basis for the limitation "the process of claims 26."

Applicants respectfully submit that claims 29 to 33 now properly depend from independent claim 28 and that there is proper antecedent basis for the limitation "the process of claim 28." Accordingly, Applicants respectfully request that the rejection of these claims be removed.

Independent claim 14 now includes the features of the cancelled claim 25.

Independent process claim 28 now includes the features of the cancelled claim 25.

New claim 39 represents the allowable claim 23 written in independent form including all of the features of the base claim. New claims 40 and 41 depend from new claim 39. Applicants respectfully submit that claims 39 to 41 are in condition for allowance.

New independent process claim 46 represents process claim 28 rewritten to include the allowable features of claim 23. New claims 47 and 48 depend from new claim 46. Applicants respectfully submit that claims 46 to 48 are in condition for allowance.

Claims 14, 15, 17, 18, 28, and 33 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,316,165 to Pavelchek et al. ("the Pavelchek et al. patent").

The Pavelchek et al. patent describes light absorbing compositions suitable for use as antireflective coating compositions having a low molecular weight resin, a plasticizer compound and/or a low Tg resin. These compositions are suitable for use with photoresist compositions.

Applicants respectfully submit that the Pavelchek et al. patent does not disclose or suggest the photolithographic sensitive coated substrate of independent claim 14. Claim 14 requires that the radiation-sensitive resist be a chemically amplified resist containing silicon. The Office Action admits on page 9 that the Pavelchek et al. patent does not disclose or suggest a radiation-sensitive resist containing silicon, let alone a chemically amplified resist. Applicants respectfully submit that claim 14 patentably distinguishes over the cited reference.

Furthermore, it should be noted that one of ordinary skill in the art would not be motivated to use the photosensitive composition having a silicon-containing monomer of the U.S. Patent No. 4,788,127 to Bailey et al. ("the Bailey et al. patent") as the topcoat photosensitive layer of the Pavelchek et al. patent, as suggested by the Office Action to achieve the photolithographic sensitive coated substrate having a chemically amplified radiation-sensitive resist containing silicon of claim 14. The compositions of the Bailey et al. patent are for use at exposure wavelengths of 365 nm to 436 nm (see col. 11, lines 22 to 24), whereas the compositions of the Pavelchek et al. patent are for use at the vastly different exposure wavelengths of 193 nm (see col. 5, line 34 of the Pavelchek et al. patent). The problem with using deep UV wavelengths (193 nm) is that resists used at the higher wavelengths (365 nm to 436 nm) were too absorbent and insensitive (see the second paragraph on page 1 of the current specification). One of ordinary skill in the art would not be motivated to use a resist designed for use at 365 to 436 nm wavelengths for 193 nm lithography.

Even if one were to combine the photosensitive composition comprising a silicon-containing monomer of the Bailey et al. patent with the antireflective coating of the Pavelchek et al. patent, for which there is no motivation, the resultant combination would not disclose or suggest the photolithographic sensitive coated substrate having a chemically amplified radiation-sensitive resist containing silicon, as in claim 14. The photosensitive composition comprising a silicon-containing monomer of the Bailey et al. patent is not chemically amplified. Chemically amplified resist materials are developed through the use of acid-labile polymers used to meet the low absorption and enhanced sensitivities required by 193 nm lithography (see the third paragraph of page one of the present specification). The Bailey et al. patent does not disclose or suggest a resist material which is chemically amplified. Applicants respectfully submit that claim 14 is patentably distinguishable over the cited references and is in condition for allowance.

Applicants respectfully submit that claims 15, 17, and 18, which depend from claim 14, are patentably distinguishable over the cited references for at least the reasons discussed above in relation to claim 14 and are in condition for allowance.

Further, claim 18 requires hydroxyl-containing polymer further having monomer units of cycloaliphatic ester of acrylic or methacrylic acid units. The importance of the use of monomer units of cycloaliphatic ester of acrylic or methacrylic acid units (such as the isobornyl methacrylate) in the present invention is indicated in the exemplary characteristics shown in Table 2 on page 17. Applicants respectfully submit that the Pavelchek et al. patent fails to disclose or suggest a hydroxyl-containing polymer further having monomer units of cycloaliphatic ester of acrylic or methacrylic acid units, as in claim 18. In fact, the Pavelchek et al. patent fails to disclose or suggest cycloaliphatic ester of acrylic or methacrylic acid units in any way. Although the Pavelchek et al. patent describes monomers including a chromophore group, e.g. an anthracenyl, quinolyl or hydroxyquinolyl group, Applicants respectfully submit that it is well known that monomer units of cycloaliphatic ester of acrylic or methacrylic acid units are not such chromophore groups. For at least this reason and the reasons discussed above, Applicants respectfully submit that claim 18 is patentably distinguishable over the Pavelchek et al. patent and is in condition for allowance.

New claim 34 represents claim 18 written in independent form including all of the features of the original base claim. New claims 35 to 38 depend from new claim 34.

New independent process claim 42 represents claim 28 rewritten to further include the features of claim 18. New claims 43 to 45 depend from new claim 42. Since the Pavelchek et al. patent fails to disclose or suggest hydroxyl-containing polymer further having monomer units of cycloaliphatic ester of acrylic or methacrylic acid units, Applicants respectfully submit that claims 34 to 38 and 42 through 45 are

patentably distinguishable over the Pavelchek et al. patent and are in condition for allowance.

Applicants respectfully submit that the Pavelchek et al. patent does not disclose or suggest the process of claim 28. Claim 28 now includes the feature of the radiation-sensitive resist topcoat being a chemically amplified resist containing silicon. As discussed above in relation to claim 14, the Pavelchek et al. patent does not disclose or suggest a chemically amplified resist containing silicon. Furthermore, process claim 28 requires the forming a coated substrate having a thermally cured undercoat disposed thereon, wherein the thermally cured undercoat comprises a thermally cured composition having a thermal acid generator. The first paragraph of page 7 of the current specification clearly indicates that the thermal acid generators of the current invention should not be considered photoacid generators. Any sensitivity that the thermal acid generators would have to UV light should be very poor, and they cannot practically be used in photolithography as a photoacid generator. The processes described in the Pavelchek et al. patent for preparing an antireflective coating composition each require a photoacid generator (such as the di-t-butyl diphenyl iodonium camphorsulfonate), not a thermal acid generator as in claim 28 (see citations to col. 16, line 52 to col. 17, line 38). Therefore, Applicants respectfully submit that claim 28, as well as claim 33 which depends from claim 28, is patentably distinguishable over the cited references.

Claims 14, 15, 27, 28, and 33 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,165,697 to Thackeray et al. ("The Thackeray et al. patent").

The Thackeray et al. patent describes antihalation compositions and methods for reducing the reflection of exposure radiation of a photoresist coated over the compositions. The compositions comprise a acid generator, a resin binder and material capable of causing a thermally induced crosslinking reaction of the resin binder.

Applicants respectfully submit that the Thackeray et al. patent does not disclose or suggest the photolithographic sensitive coated substrate of independent claim 14. Claim 14 requires that the radiation-sensitive resist be a chemically amplified resist containing silicon. The Office Action admits on page 9 that the Thackeray et al. patent does not disclose or suggest a radiation-sensitive resist containing silicon, let alone a chemically amplified resist. Applicants respectfully submit that claim 14 patentably distinguishes over the cited reference.

Further, as discussed above in relation to the Pavelchek et al. patent, one of ordinary skill in the art would not be motivated to use the photosensitive composition having a silicon-containing monomer of the the Bailey et al. patent as the topcoat photosensitive layer of the Thackeray et al. patent, as suggested by the Office Action to achieve the photolithographic sensitive coated substrate having a chemically amplified radiation-sensitive resist containing silicon of claim 14. As the antihilation compositions of the Thackeray et al. patent are designed for use at the deep UV wavelength of 248 nm, the arguments for the lack of motivation to combine the compositions of Pavelchek with the resist of the Bailey et al patent apply equally well to the Thackeray et al. patent. Additionally, the Bailey et al. patent (see above) does not disclose or suggest a chemically amplified resist. Therefore, as above, even if one were to combine the Bailey et al. patent with the Thackeray et al. patent it would not disclose or suggest the photolithographic sensitive coated substrate having a chemically amplified radiation-sensitive resist containing silicon of claim 14.

Applicants respectfully submit that claim 14 is patentably distinguishable over the cited references and is in condition for allowance.

Applicants respectfully submit that claims 15 and 27, which depend from claim 14, are patentably distinguishable over the cited references for at least the reasons discusses above in relation to claim 14 and are in condition for allowance.

Applicants respectfully submit that the Thackeray et al. patent does not disclose or suggest the process of claim 28. Claim 28 now includes the feature of the radiation-sensitive resist topcoat being a chemically amplified resist containing silicon. As discussed above in relation to claim 14, the Thackeray et al. patent does not disclose or suggest a chemically amplified resist containing silicon. Therefore, Applicants respectfully submit that claim 28, as well as claim 33 which depends from claim 28, is patentably distinguishable over the cited references.

Claims 16 and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the Pavelchek et al. patent as applied to claims 14, 15, 17, 18, 28, and 33.

Claims 16 and 27 depend from independent claim 14 and therefore also have the feature that the radiation-sensitive topcoat be a chemically amplified resist containing silicon. As discussed above in relation to claim 14, the Pavelchek et al. patent does not disclose or suggest a radiation-sensitive topcoat be a chemically amplified resist containing silicon. Therefore, the Pavelchek et al. patent fails to disclose or suggest each and every element of claims 16 and 27. For at least these reasons, Applicants respectfully submit that claims 16 and 27 are patentably distinguishable over the Pavelchek et al. patent.

Claims 16, 21, 22, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Thackeray et al. patent as applied to claims 14, 15, 27, 28, and 33.

Claims 16, 21, and 22 depend from independent claim 14 and claim 30 depends from independent claim 28. Therefore claims 16, 21, 22, and 30 each also have the feature that the radiation-sensitive topcoat be a chemically amplified resist containing silicon, as in claims 14 and 28. As discussed above in relation to claim 14 and 28, the Thackeray et al. patent does not disclose or suggest a radiation-sensitive topcoat be a chemically amplified resist containing silicon. Therefore, the Thackeray

et al. patent fails to disclose or suggest each and every element of claims 16, 21, 22, and 30. For at least these reasons, Applicants respectfully submit that claims 16, 21, 22, and 30 are patentably distinguishable over the Thackeray et al. patent.

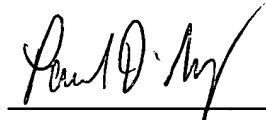
Claim 25 is rejected under 35 U.S.C. § 103(a) as being unpatentable over the Pavelchek et al. patent as applied to claims 14, 15, 17, 18, 28, and 33 or the Thackeray et al. patent as applied to claims 14, 15, 27, 28, and 33 in further view of U.S. Patent No. 4,788,127 to Bailey et al. ("the Bailey et al. patent").

Applicants respectfully submit that claim 25 has been cancelled and such the rejection is moot.

In view of the foregoing, Applicants respectfully submit that all claims presented in this application patentably distinguish over the cited prior art and the cited combinations of same. All amendments to the claims include features previously included in the claims and do not require further search. Accordingly, Applicants respectfully request favorable consideration and the passage of all claims to allowance.

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Respectfully submitted,



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